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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/988,272	11/19/2001	Hirotoshi Kubo	981206A	8401

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EXAMINER	
HOGANS, DAVID L	

ART UNIT	PAPER NUMBER
2813	

DATE MAILED: 07/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/988,272	KUBO ET AL.	
	Examiner	Art Unit	
	David L. Hogans	2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 May 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *12-15 and 22-24* is/are pending in the application.

4a) Of the above claim(s) *16-21* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12-15 and 22-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to the Amendment filed on May 27, 2004.

Status of Claims

Claims 12-15 and 22-24 are pending. Claims 16-21 are withdrawn. Claims 1-11 are cancelled. Claim 24 is new.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Stephen G. Adrian on June 18, 2004.

The application has been amended as follows: Claim 12 line 17; delete "material" and insert "layer".

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 12-14 and 22-24 are rejected under 35 U.S.C. 102(e) as being anticipated by 5,631,484 to Tsoi et al.

In reference to Claims 12, Tsoi et al. teaches:

- forming a drain layer (28) of a first conduction type (n) on a surface of a semiconductor substrate (27) of the first conduction type (n); (See Figures 2-14 and columns 2-8 lines 30-22)
- forming a first insulating film (33) on said drain layer (28); (See Figures 2-14 and columns 2-8 lines 30-22)
- forming a first conductive layer (34) on said first insulating film (33); (See Figures 2-14 and columns 2-8 lines 30-22)
- forming a second insulating film (37) on said first conductive layer (34); (See Figures 2-14 and columns 2-8 lines 30-22)
- patterning said second insulating film, said first conductive layer, and said first insulating film, to form a gate insulating film (33) from said first insulating film, and a gate electrode (34) from said first conductive layer; (See Figures 2-14 and columns 2-8 lines 30-22)
- implanting an impurity of a second conduction type (p) opposite to the first conduction type into a surface of said drain layer using said gate electrode as a mask, thereby forming a channel region of the second conduction type (47); (See Figures 2-14 and columns 2-8 lines 30-22)

- implanting an impurity of the first conduction type (n) into said channel region with using said gate electrode as a mask, thereby forming an impurity region of the first conduction type (52); (See Figures 2-14 and columns 2-8 lines 30-22)
- forming a third insulating film (56) so as to cover a surface of the impurity region, side walls of said gate insulating film, said gate electrode, and said second insulating film, and an upper face of said second insulating film; (See Figures 2-14 and columns 2-8 lines 30-22)
- etching back said third insulating film to form a side wall insulator (58) of said third insulating film, by maintaining said third insulating film selectively on side walls of said gate insulating film, said gate electrode, and said second insulating film; (See Figures 2-14 and columns 2-8 lines 30-22)
- etching the impurity region (52) to form a recess (66) so as to penetrate the impurity region, thereby forming a source region (152) of the impurity region; (See Figures 2-14 and columns 2-8 lines 30-22) and
- forming a second conductive layer (71) on an entire surface, and patterning said second conductive layer, thereby forming a wiring layer (See Figures 2-14 and columns 2-8 lines 30-22)

In reference to Claim 13, Tsoi et al. teaches:

- introducing an impurity of the second conduction type (p) into the bottom of the recess to form a body contact region (121) of the second conduction after etching

the impurity region prior to forming a second conductive layer (71) (See Figures 2-14 and columns 2-8 lines 30-22)

In reference to Claim 14, Tsoi et al. teaches:

- forming a mask pattern (61) having an opening located in a center of the impurity region and covering an entire surface except for the opening before etching the impurity region; (See Figures 2-14 and columns 2-8 lines 30-22)
- etching the impurity region by using the mask pattern to form a recess (66) deeper than the impurity region (52), thereby forming a source region (152) of the impurity region remained; (See Figures 2-14 and columns 2-8 lines 30-22) and
- introducing an impurity of the second conduction type (p) into the bottom of the recess to form a body contact region (121) of the second conduction type (See Figures 2-14 and columns 2-8 lines 30-22)

In reference to Claim 22, Tsoi et al. teaches:

- an upper surface and a side surface of the source region are directly contacted with the wiring layer (71) (See Figures 2-14 and columns 2-8 lines 30-22)

In reference to Claim 23, Tsoi et al. teaches:

- an opening of the mask pattern (61) is formed smaller than a region of the impurity region between the adjacent sidewall insulators (58) (See Figures 2-14 and columns 2-8 lines 30-22)

In reference to Claim 24, Tsoi et al. teaches:

- wherein said third insulating film is formed in one step (56) (See Figures 2-14 and columns 2-8 lines 30-22)

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over 5,631,484 to Tsoi et al. in view of Applicant's Admitted Prior Art (AAPA).

Incorporating all arguments of Claim 12 and noting that Tsoi et al. fails to explicitly teach a fourth insulating layer formed on the substrate that is patterned so as to remain a peripheral region on the substrate.

However, Applicant's specification, page 2 lines 10-18, discloses a thick oxide that is patterned to be formed in bonding pad site regions (i.e. – on the periphery of the substrate).

It would have been obvious to one of ordinary skill in the art to modify Tsoi by incorporating a fourth insulating layer formed on the substrate that is patterned so as to remain a peripheral region on the substrate, as taught by Applicant's Admitted Prior Art, to create regions for bonding pads.

Response to Arguments

5. Applicant's arguments filed May 27, 2004, have been fully considered but they are not persuasive.

The crux of Applicant's argument is that Applicant's third insulating film is only comprised by one material/layer and that 5,631,484 to Tsoi et al. fails to teach this limitation. The Examiner kindly refers Applicant to column 4 lines 60-65, where Tsoi et al. teaches that layer 54 need not be present. Therefore, Tsoi et al. teaches all the limitations of Applicant's claimed invention (i.e. – the third insulating film is only comprised by one layer(56)).

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David L. Hogans whose telephone number is (571) 272-1691. The examiner can normally be reached on M-F (7:30-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DH

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